

## Emergency Management Competency 1.4

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**Competency 1.4** Emergency management personnel shall demonstrate a working level knowledge of protective measures.

### 1. Supporting Knowledge and Skills

- a. Discuss the types, uses, and limitations of radiological, chemical, and personal protective equipment.
- b. Describe the implementation and process of decontamination operations in a radiological and chemical environment.
- c. Discuss the concepts of sheltering, evacuation, and relocation.
- d. Discuss the role of Protective Action Guides, Emergency Response Planning Guides, and pollution standards in emergency planning and response.

### 2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

| Web Sites                     |                                                                                                       |                                        |
|-------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------|
| Organization                  | Site Location                                                                                         | Notes                                  |
| Department of Energy          | <a href="http://wastenot.inel.gov/cted/stdguido.html">http://wastenot.inel.gov/cted/stdguido.html</a> | DOE Standards, Guides, and Orders      |
| U.S. House of Representatives | <a href="http://law.house.gov/cfr.htm">http://law.house.gov/cfr.htm</a>                               | Searchable Code of Federal Regulations |

**Read** 29 CFR 1910.120, Appendix B, “General Description and Discussion of the Levels of Protection and Protective Gear,” pages 403 through 405.

**Read** 29 CFR 1910.132, “General Requirements,” pages 410 through 411.

EXERCISE 1.4-A Discuss the levels of protection afforded by PPE.

EXERCISE 1.4-B What are the minimum training requirements for employees required to use PPE?

## Emergency Management Competency 1.4

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**Read** NFPA 471, "Recommended Practice for Responding to Hazardous Material Incidents," Chapter 7, Decontamination, Items 7-1 through 7-3.7.

EXERCISE 1.4-C What is the "conservative" approach to take on implementation of decontamination processes?

**Read** the *DOE Radiological Control Manual*, Chapter 4, Item 463, Decontamination.

EXERCISE 1.4-D Who "should" be responsible for directing decontamination efforts for a radioactively contaminated area?

EXERCISE 1.4-E What are the preferred agents for decontamination?

**Read** the Emergency Management Guide, *Interim Guidance for Protective Actions*, June 1, 1993, Section C.4, "Evacuation and Sheltering of Workers," pages 10 through 11.

**Read** the Emergency Management Guide, *Interim Guidance for Protective Actions*, June 1, 1993, Section C.8.f, "Relocation," page 15.

EXERCISE 1.4-F Sheltering should be used instead of evacuation under what circumstances?

**Read** DOE Order 5500.1B, *Emergency Management System*, Attachment 2, Definitions.

EXERCISE 1.4-G Discuss the role of Protective Action Guides, Emergency Response Planning Guides, and pollution standards in emergency planning and response.

### 3. Summary

Protective measures should be implemented as soon as possible after an emergency has been declared. A properly prepared and trained team should be ready to go into action immediately. An understanding of the concepts of sheltering, evacuation, and relocation will help determine the necessary actions to take. Knowing the role of the Protective Action Guides, the Emergency Response Planning Guides, and the pollution standards for the facility/area will help determine how the emergency is approached, as well as what protective equipment is necessary. Once the emergency is contained, the process of decontamination can begin.

## Emergency Management Competency 1.4

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### 4. Exercise Solutions

EXERCISE 1.4-A Discuss the levels of protection afforded by PPE.

ANSWER 1.4-A Level A - Provides the greatest level of protection to the skin, respiratory system, and eyes.

Level B - Provides the highest level of respiratory protection, but a lesser degree of skin protection.

Level C - The concentration(s) and types of airborne substance(s) is known, and the criteria for using air-purifying respirators are met.

Level D - A work uniform affording minimal protection, used for nuisance contamination only.

EXERCISE 1.4-B What are the minimum training requirements for employees required to use PPE?

ANSWER 1.4-B Each employee required to wear PPE shall be trained to know at least the following:

1. When PPE is necessary
2. What PPE is necessary
3. How to don, doff, adjust, and wear the PPE
4. The limitations of the PPE
5. The proper care, maintenance, useful life, and disposal of the PPE

EXERCISE 1.4-C What is the “conservative” approach to take on implementation of decontamination processes?

ANSWER 1.4-C The conservative action is always to assume that contamination has occurred and to implement a thorough, technically sound decontamination procedure until it is determined or judged to be unnecessary.

EXERCISE 1.4-D Who “should” be responsible for directing decontamination efforts for a radioactively contaminated area?

ANSWER 1.4-D Facility line management should be responsible for directing decontamination efforts.

## Emergency Management Competency 1.4

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EXERCISE 1.4-E What are the preferred agents for decontamination?

ANSWER 1.4-E Water and steam are the preferred decontamination agents.

EXERCISE 1.4-F Sheltering should be used instead of evacuation under what circumstances?

ANSWER 1.4-F Sheltering may be the appropriate action when the following conditions exist:

1. The net benefit is greater than that associated with evacuation.
2. It places the workers in a position where additional instructions can be rapidly disseminated.
3. Rapid evacuation is impeded.
4. Plume arrival is imminent.

EXERCISE 1.4-G Discuss the role of Protective Action Guides, Emergency Response Planning Guides, and pollution standards in emergency planning and response.

ANSWER 1.4-G When planning for an emergency and the appropriate response, the Emergency Response Planning Guides will tell you the maximum dosages or levels of hazardous chemicals exposures that, when exceeded by a short-term or acute exposure (up to 1 hour), will cause irreversible or serious health effects in humans. Protective Action Guides are levels or ranges of radiation exposure above which protective action should be taken. These values should reflect a balance of risks and costs to personnel, the public, and the environment (pollution standards) weighed against the benefits obtained from the actions.